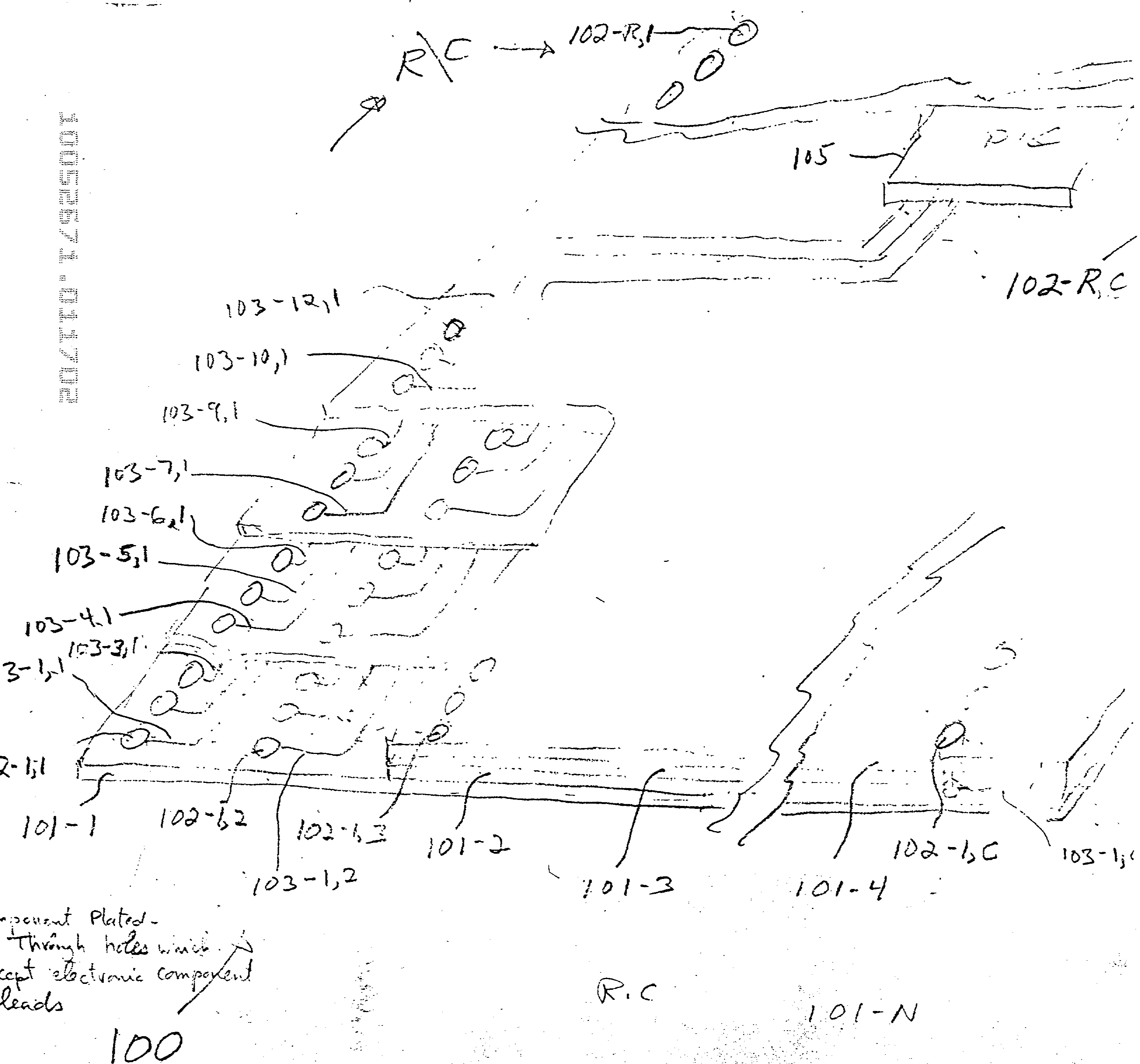


FIGURE 1a

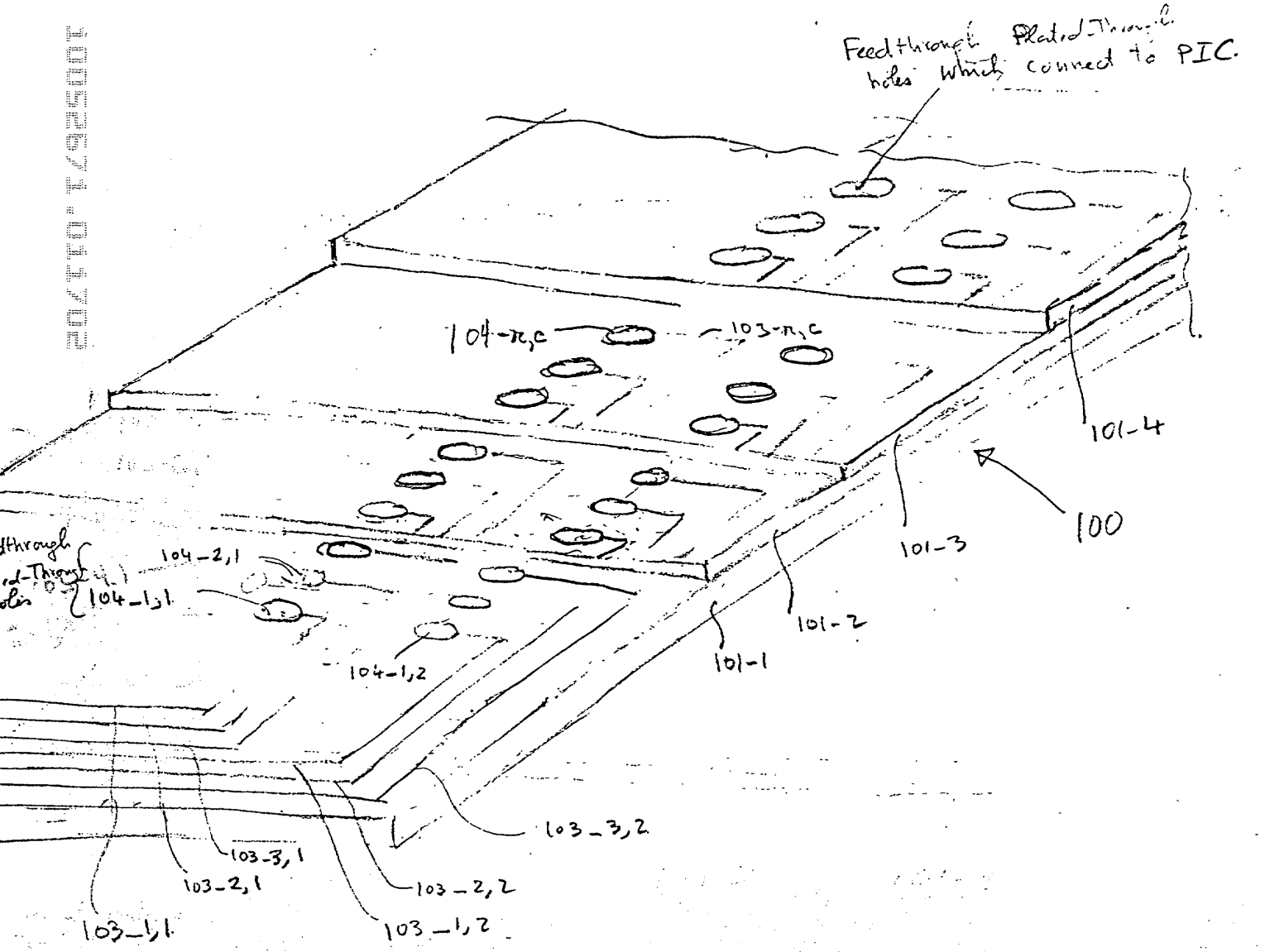

Feedthrough Plated Through holes which connect to PIC.
104-n,c
103-n,c
101-4
100
101-3
101-2
101-1
104-2,1
104-1,1
104-1,2
103-3,2
103-3,1
103-2,1
103-2,2
103-1,1
103-1,2

FIGURE 1B

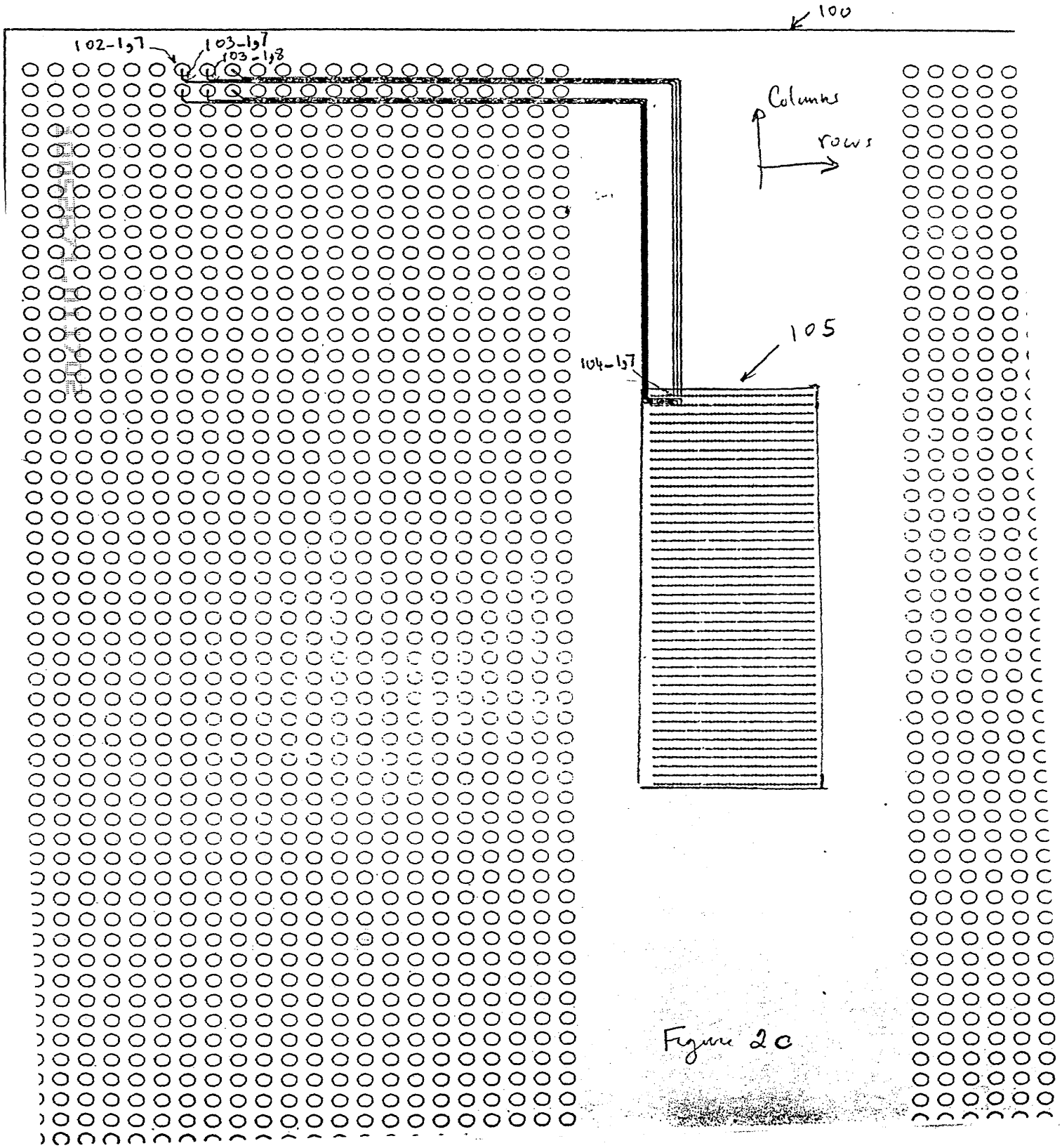


Figure 2c

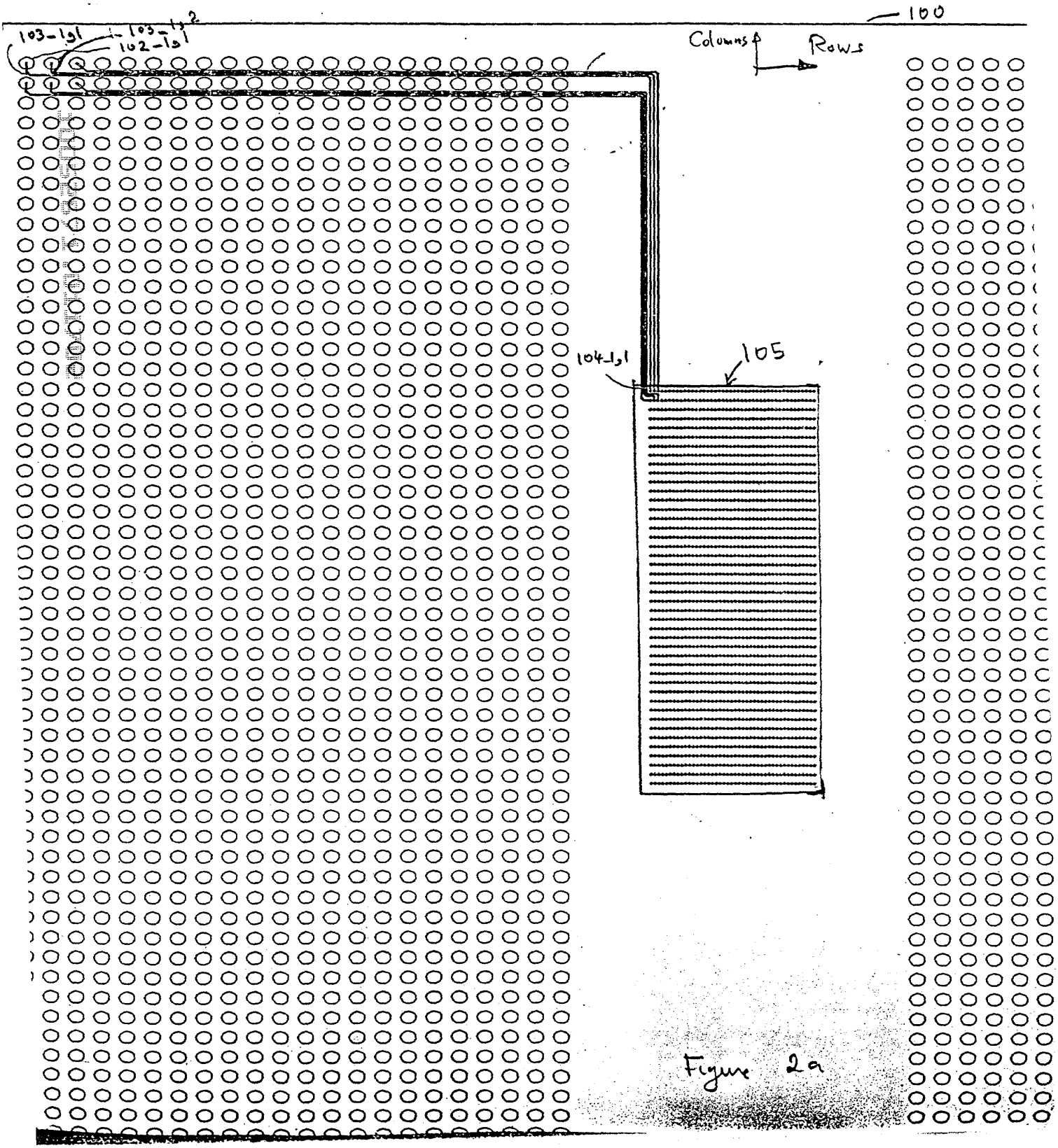


Figure 2a

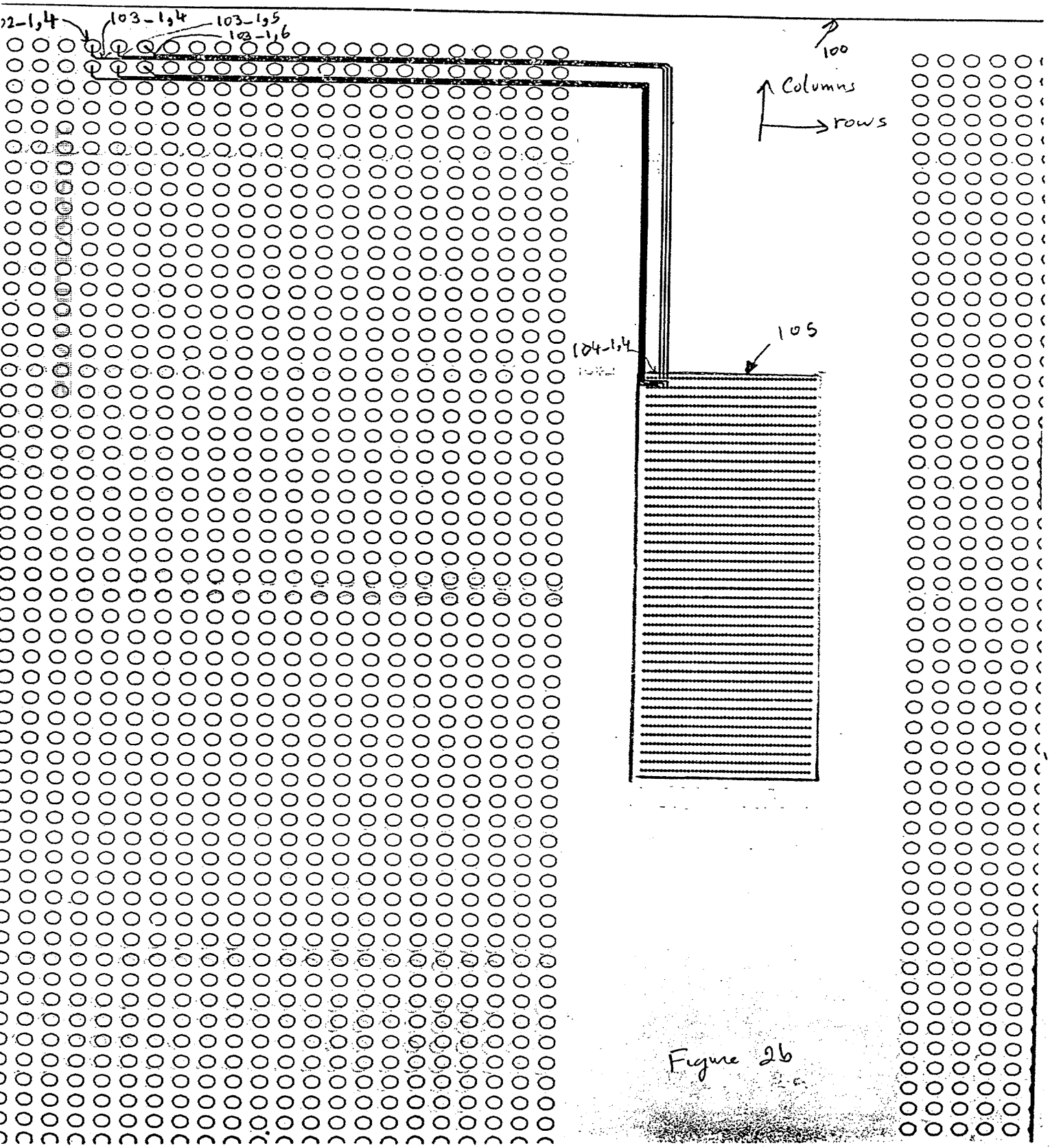


Figure 2b

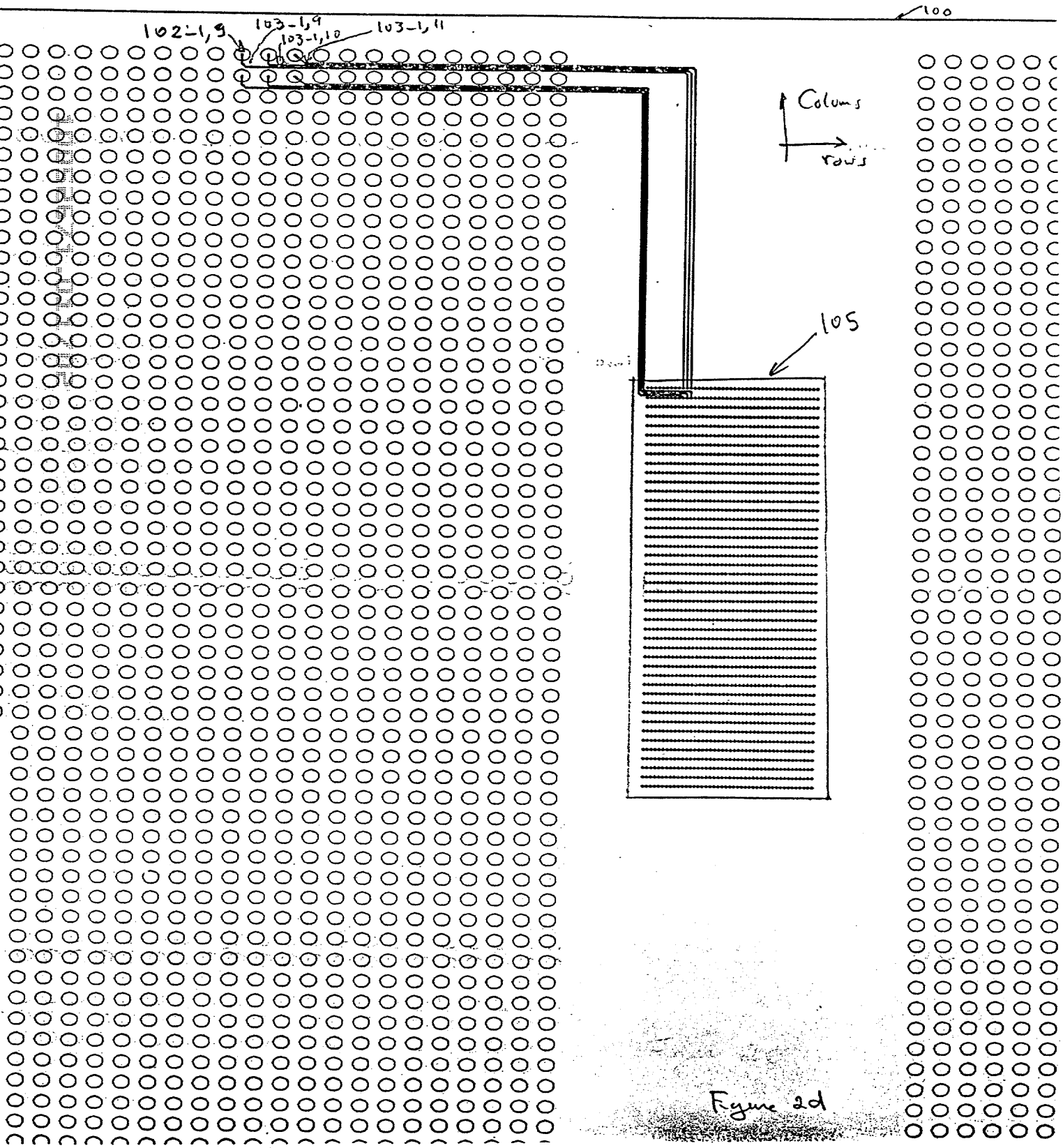
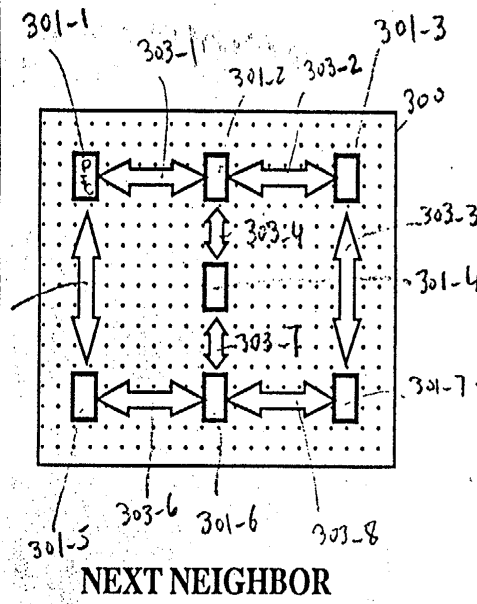


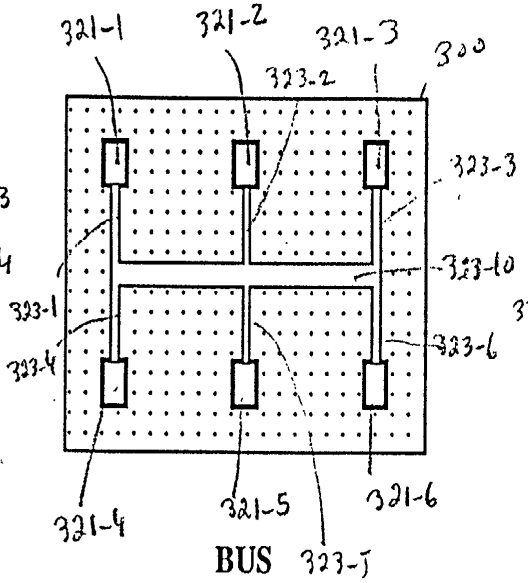
Figure 2d

GLOBAL INTERCONNECT ARCHITECTURE



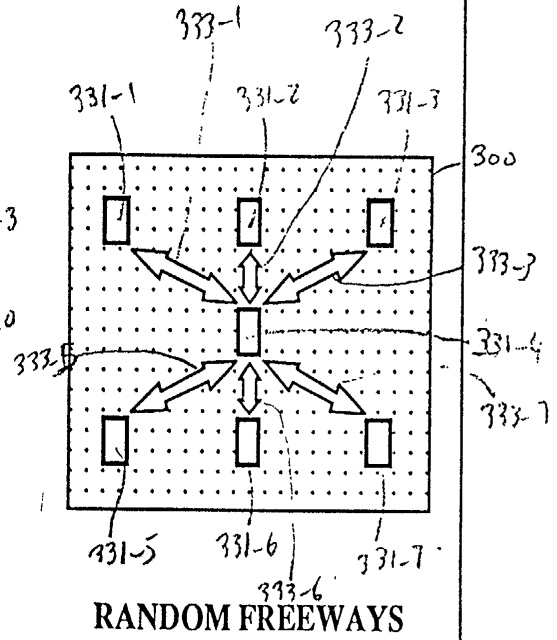
NEXT NEIGHBOR

Figure 3a



BUS

Figure 3c



RANDOM FREEWAYS

Figure 3d

Hierarchy of Global [illegible]

~~FREEWAY SYSTEM~~

Next Neighbour

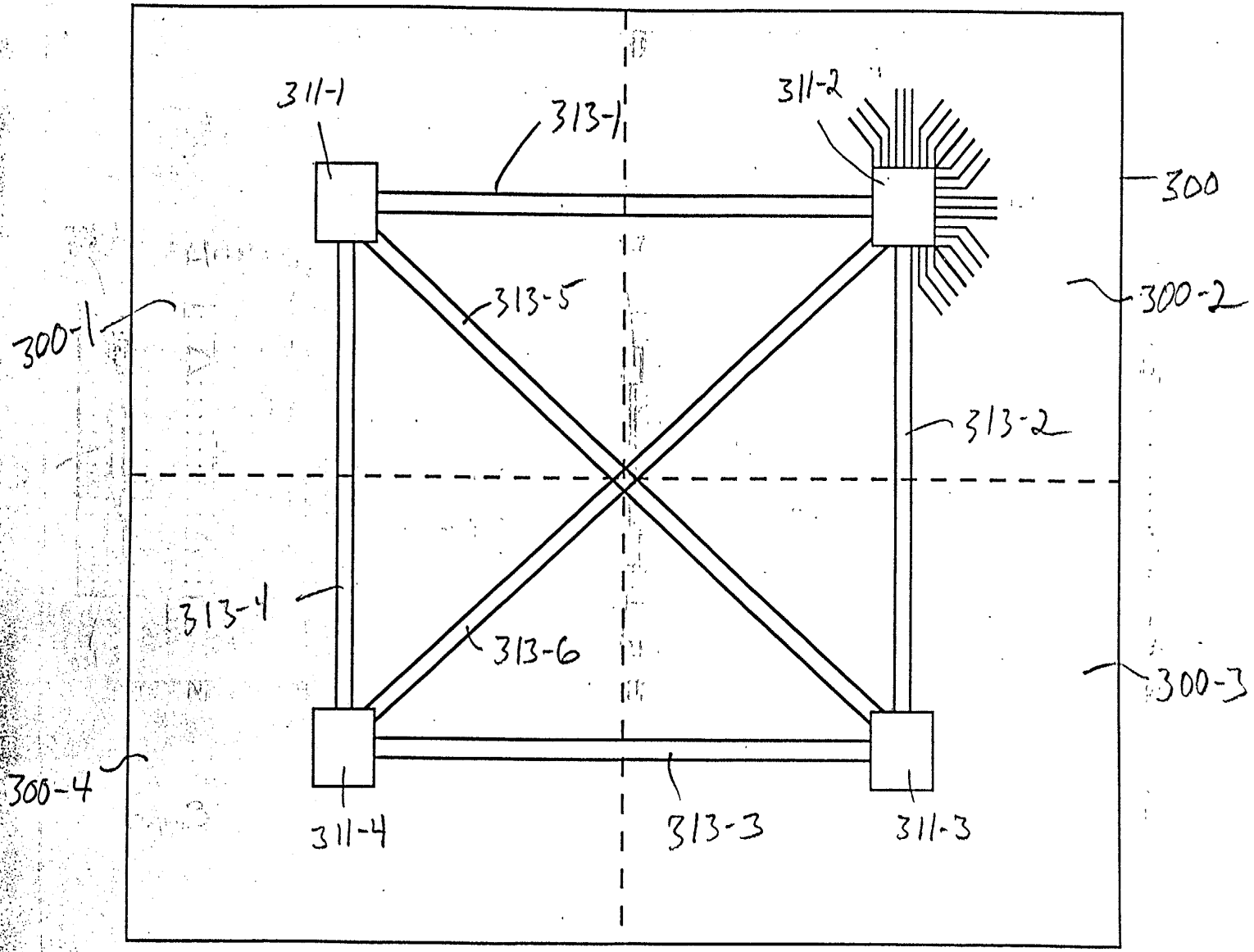


Figure 3b

FIELD PROGRAMMABLE PCB

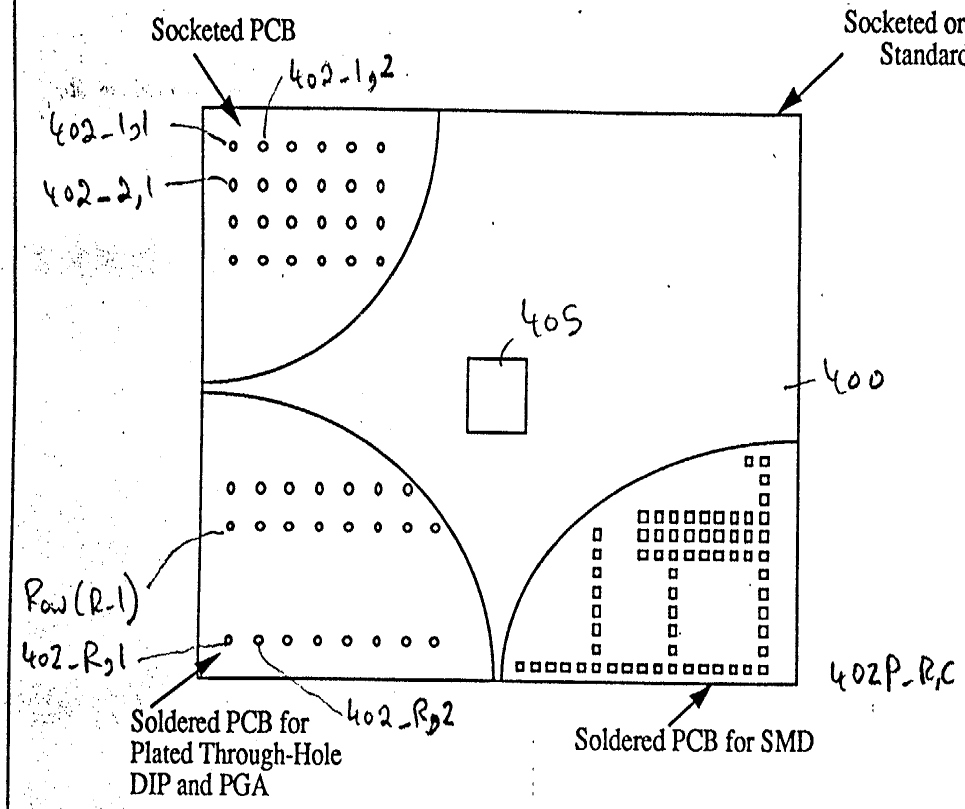


Figure 4a

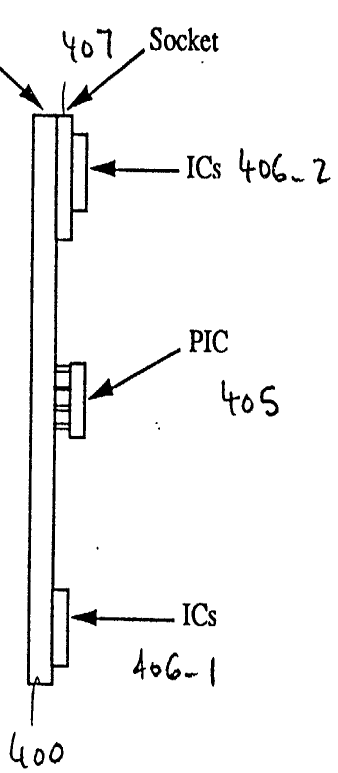


Figure 4b

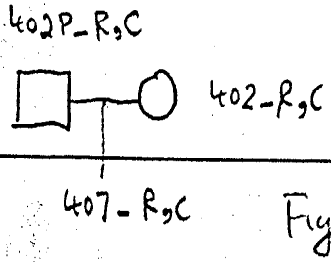


Figure 4c

Control port and TESTPORT/DIAGNOSTIC TOOL

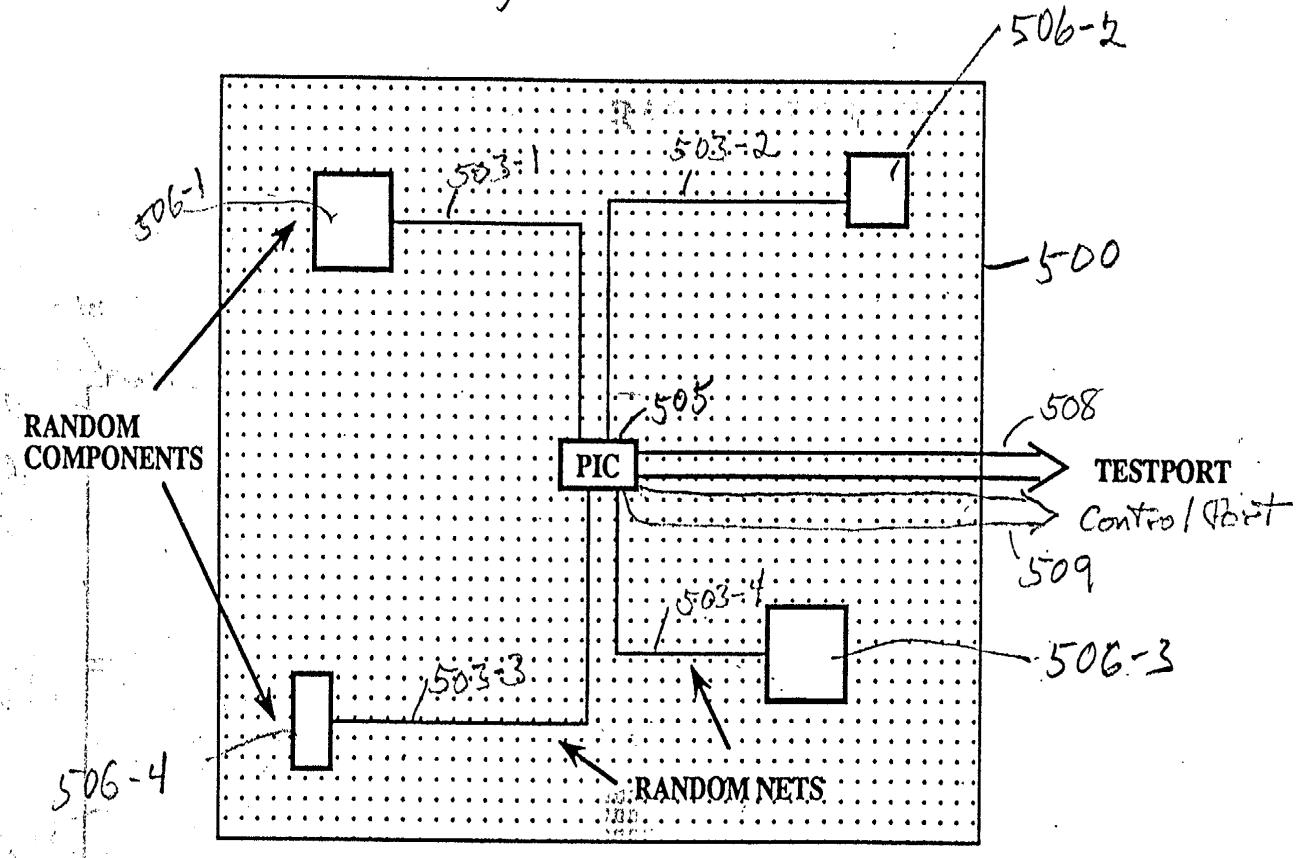


FIGURE 5

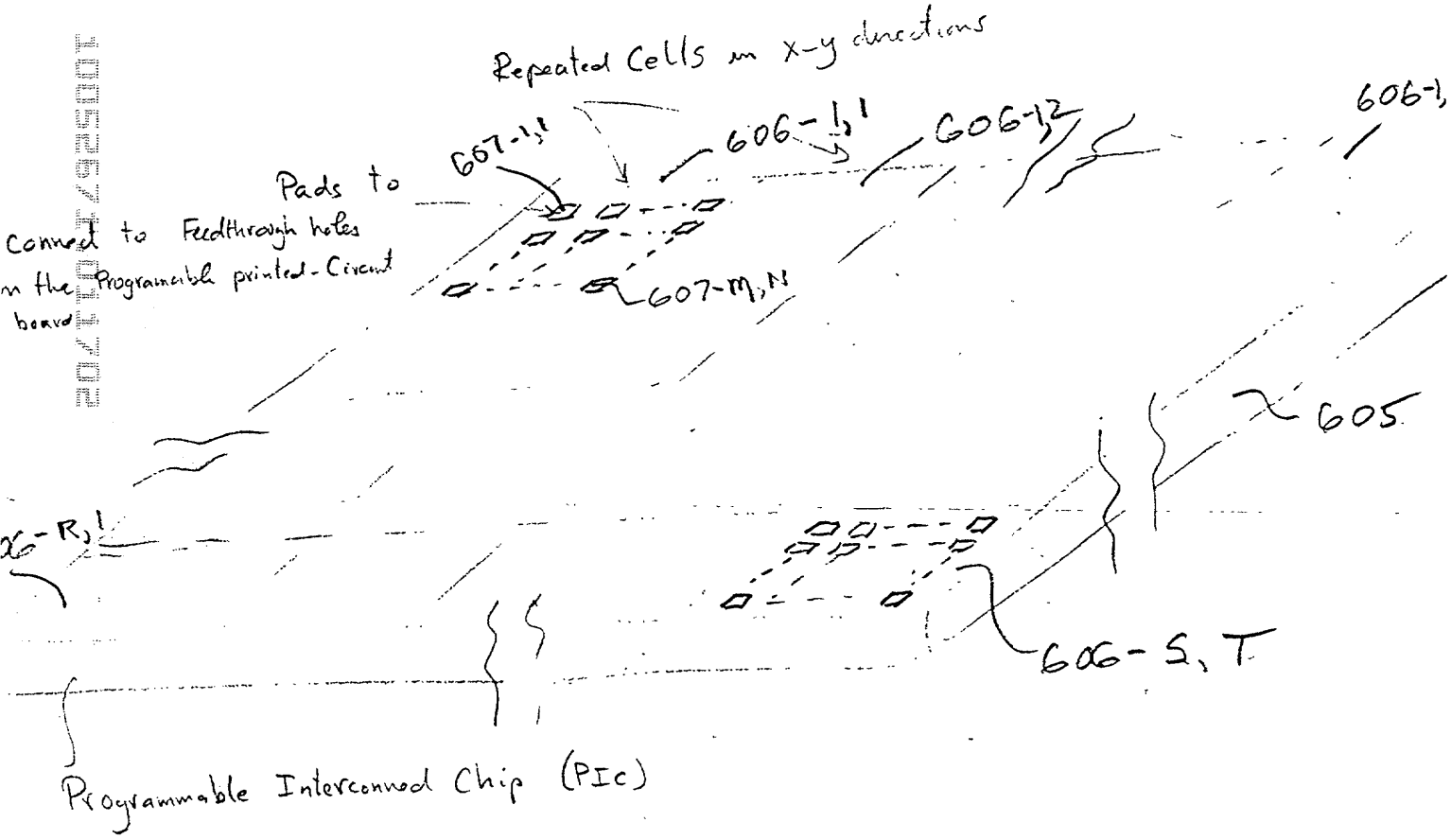
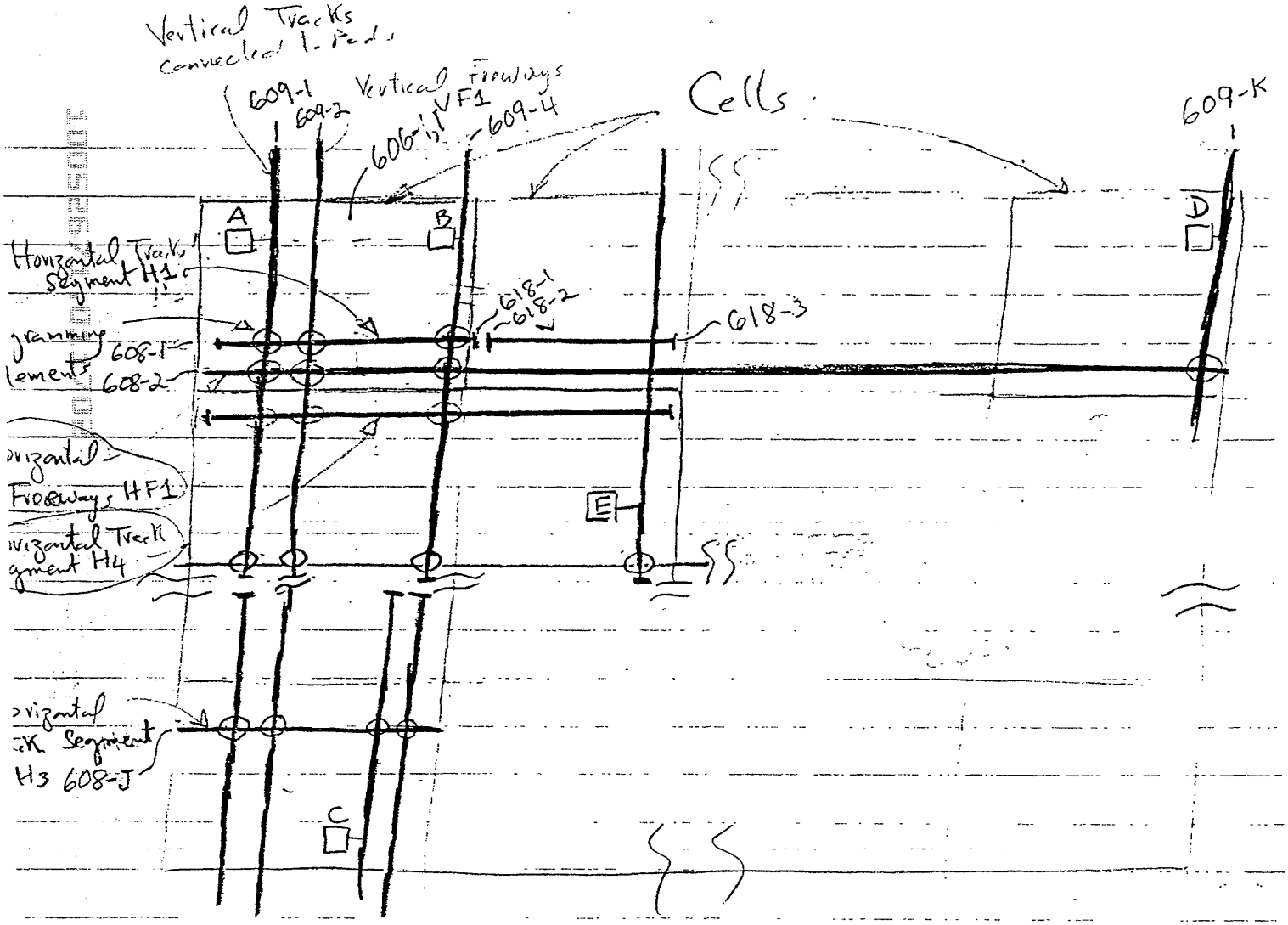

Repeated Cells in x-y directions
607-1,1
606-1,1
606-1,2
606-1,
Pads to
Connect to Feedthrough holes
in the Programmable printed-Circuit
board
607-M,N
605
606-R,1
606-S,T
Programmable Interconned Chip (PIc)

FIGURE 6a

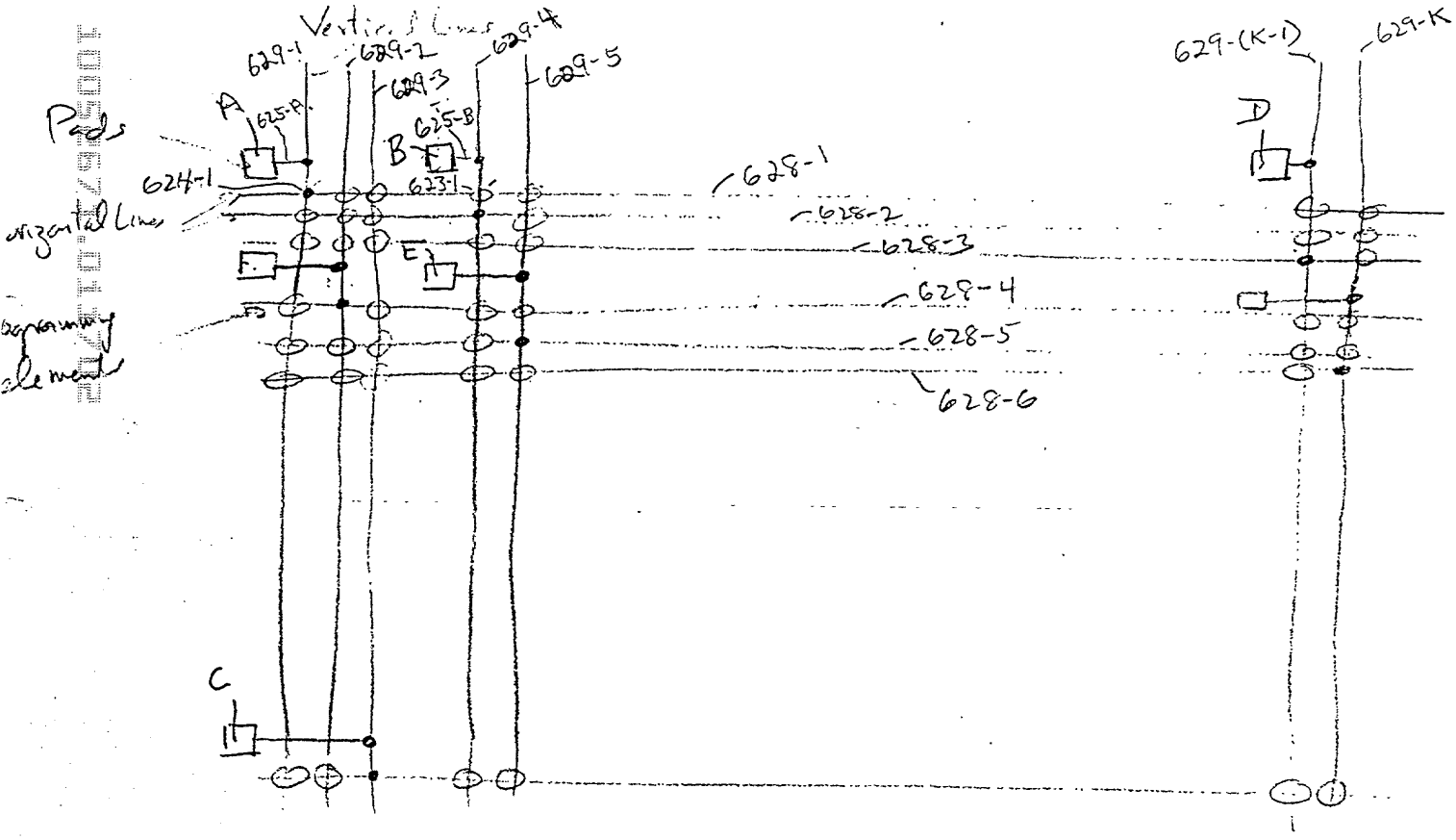


To connect A to B program elements at Intersects (A-H1) and (H1-B)
" A to D " " " " (A-HF1) and (HF1-D)
" A to C " " " " (A-H1), (H1-VF1), (VF1-H_3) and (H_3-C)
" A to E " " " " (A-H_4) and (H_4-E)

Divided Cross-Point Switch-Matrix Array of the PIC

FIGURE 6B

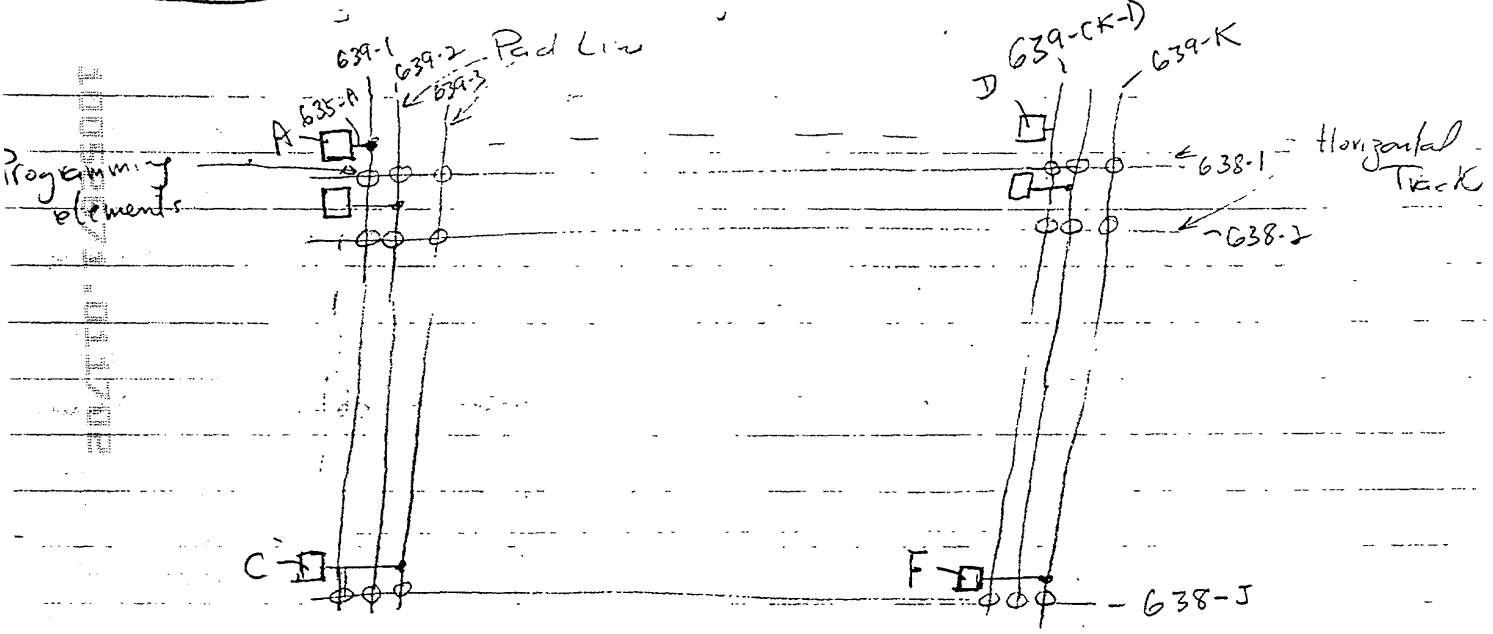
Single Cross-point Switch-Matrix Array of PIC



- Each pad connects to a vertical line.
- Each vertical is connected to a horizontal lines
- Connection of one pad to another include one programming element only
- Inefficient as number of pads become large (eg 100 - 300)
- Total number of programming elements = $(\text{No. of Pads})^2$

FIGURE 2

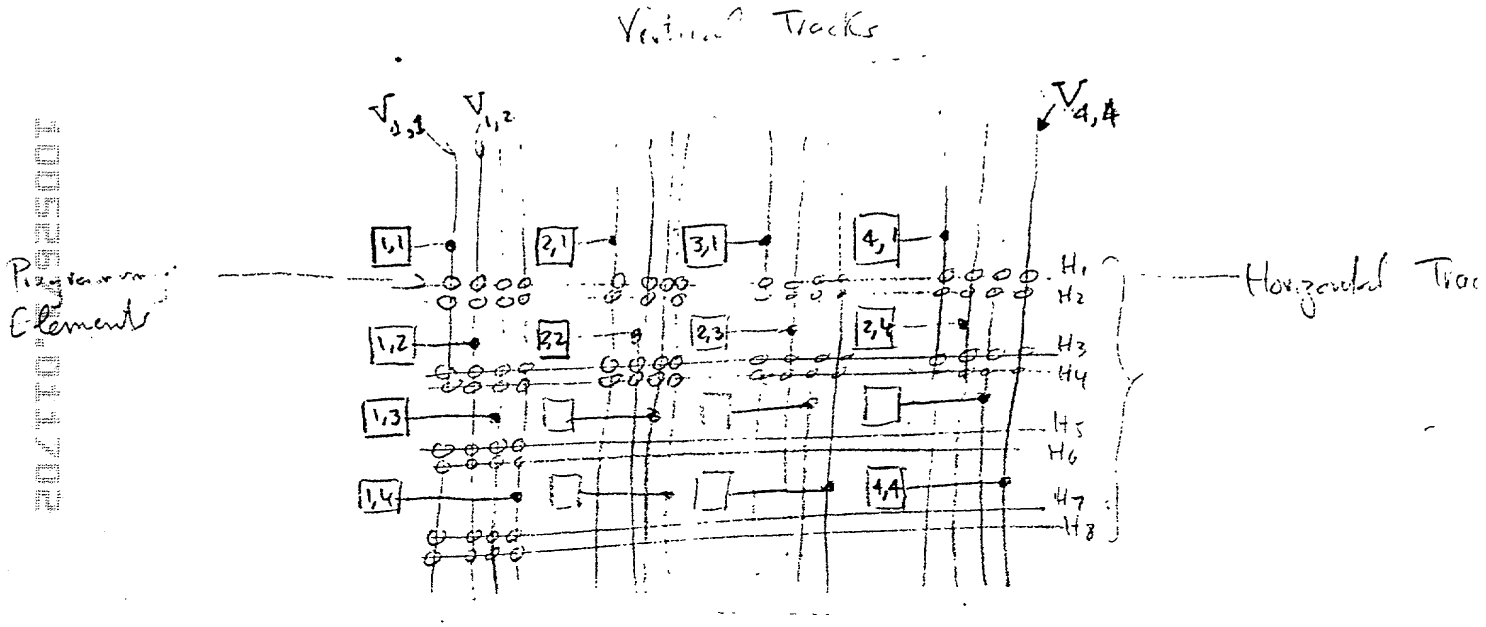
Single Cross-point Switch - Matrix Array of PIC



- Each pad connected to a Vertical line
- Number of horizontal lines $\leq \frac{1}{2}$ number of vertical lines

- Connection of one pad to another include two programming elements
- Number of programming elements $\leq \frac{1}{2}$ (Number of pads)^2
- Inefficient as number of pads become large (For example above 200 - 500)

FIGURE 6d



Single Cross-point Switch-Matrix Array For 16 pads

To connect pad (1,1) to pad (4,1)

Program elements at Intersects of $(V_{1,1} - H_1)$ and $(H_1 - V_{4,1})$

To connect pad (1,2) to pad (4,4)

Program element at Intersects of $(V_{1,2} - H_3)$ and $(H_3 - V_{4,4})$

FIGURE 6e

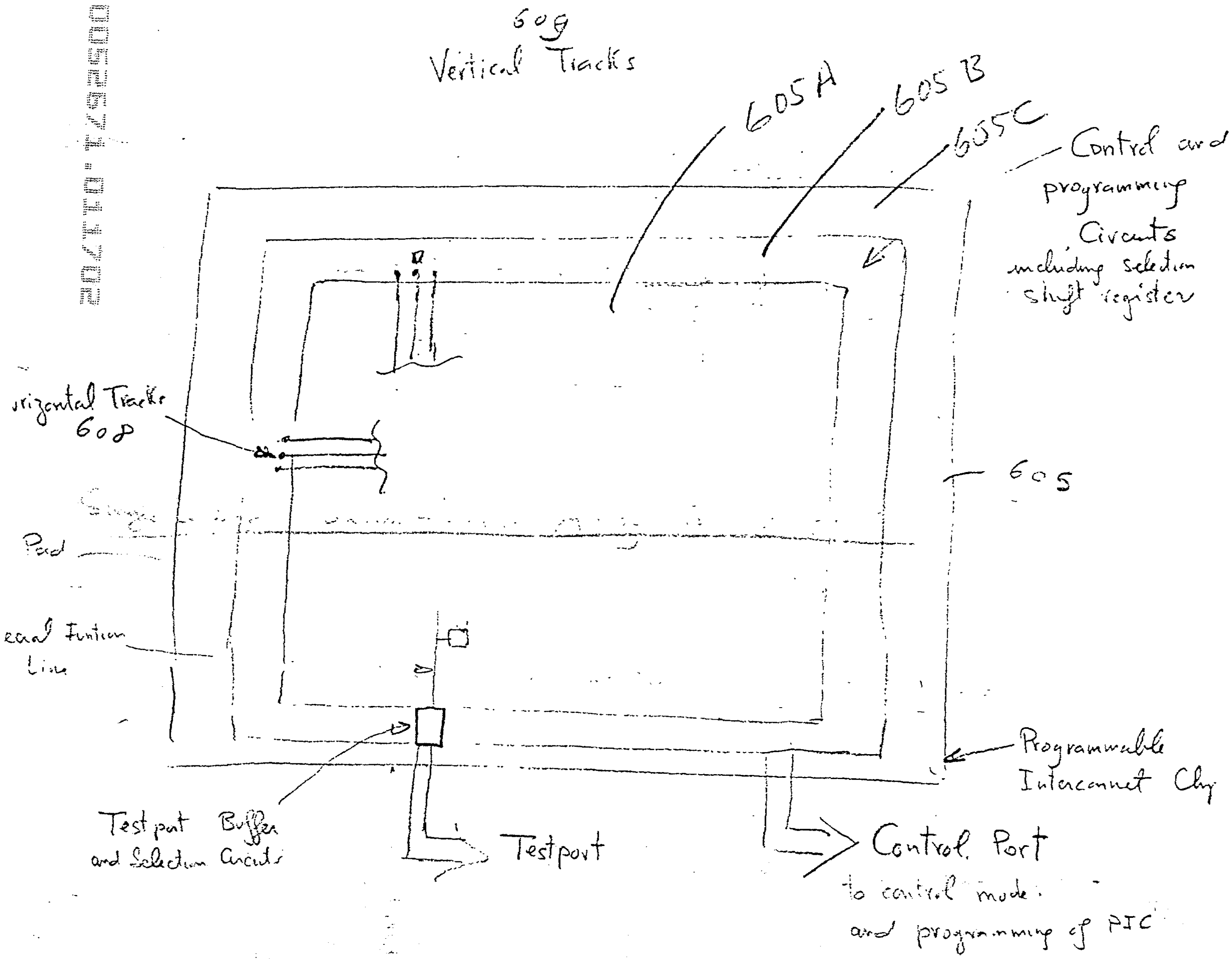
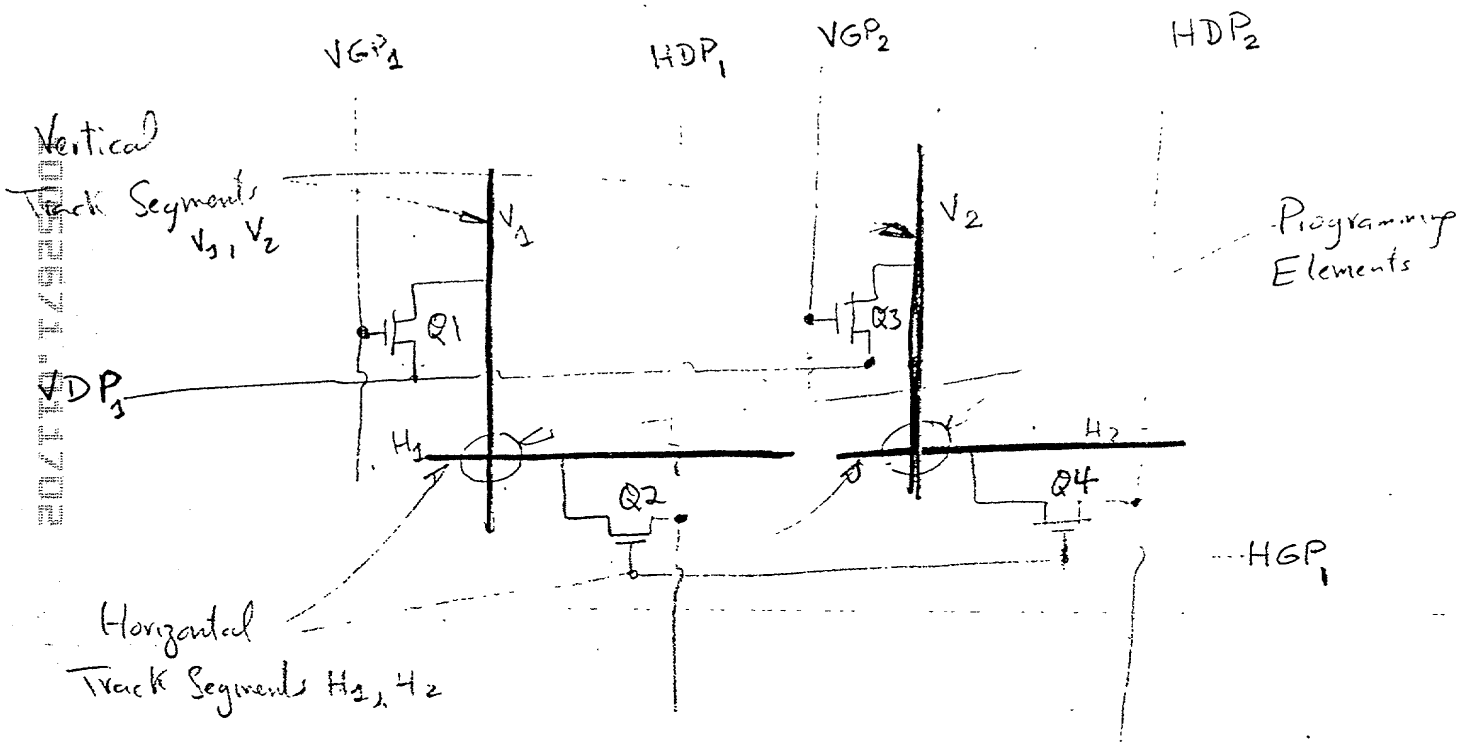


FIGURE 7a



Programming Scheme to select Horizontal and vertical segments in the PIC with only two transistor in Programming circuit path to allow current to reach hundreds of mAmps.

To program H_1 to V_1, Take $VGP_1 = V_{GH}$, $VGP_2 = 0$, $VDP_1 = V_{PP}$

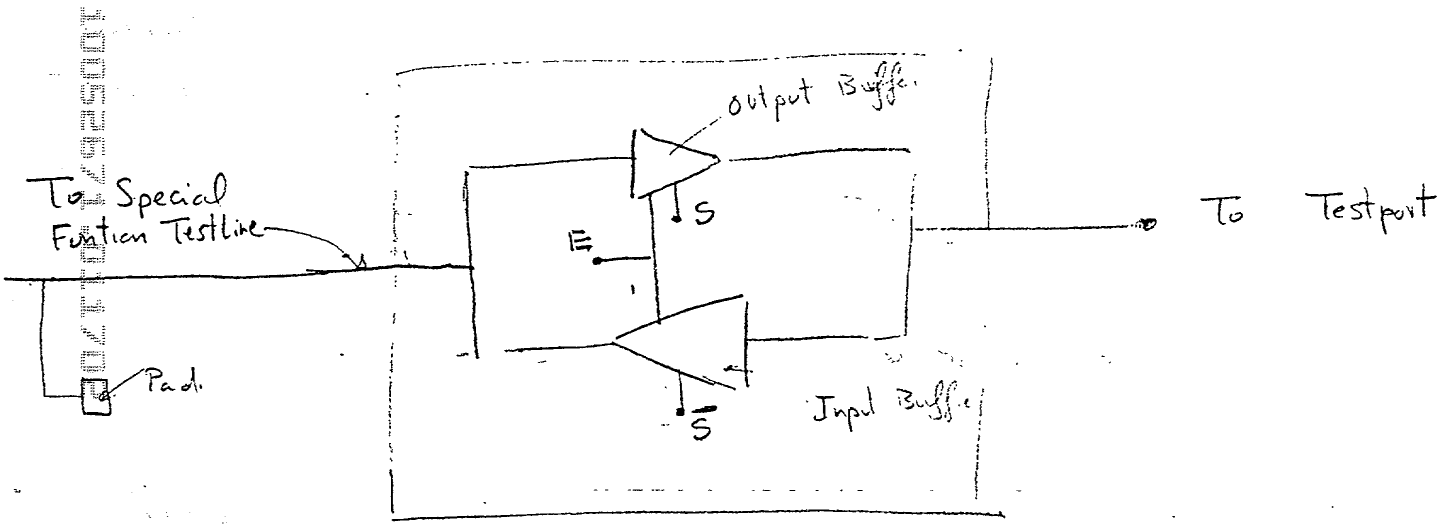
$HGP_1 = V_{GH}$, $HDP_1 = 0$, $HDP_2 =$ Open

Where V_{PP} is the programming voltage ~ 15 to 50 Volts

V_{GH} is larger than V_{PP} by transistor threshold voltage ~ 1.8 to 5.3 Volts

Only Programing element at Intersect of track segments H_1 and V_1 see the full programming voltage V_{PP}

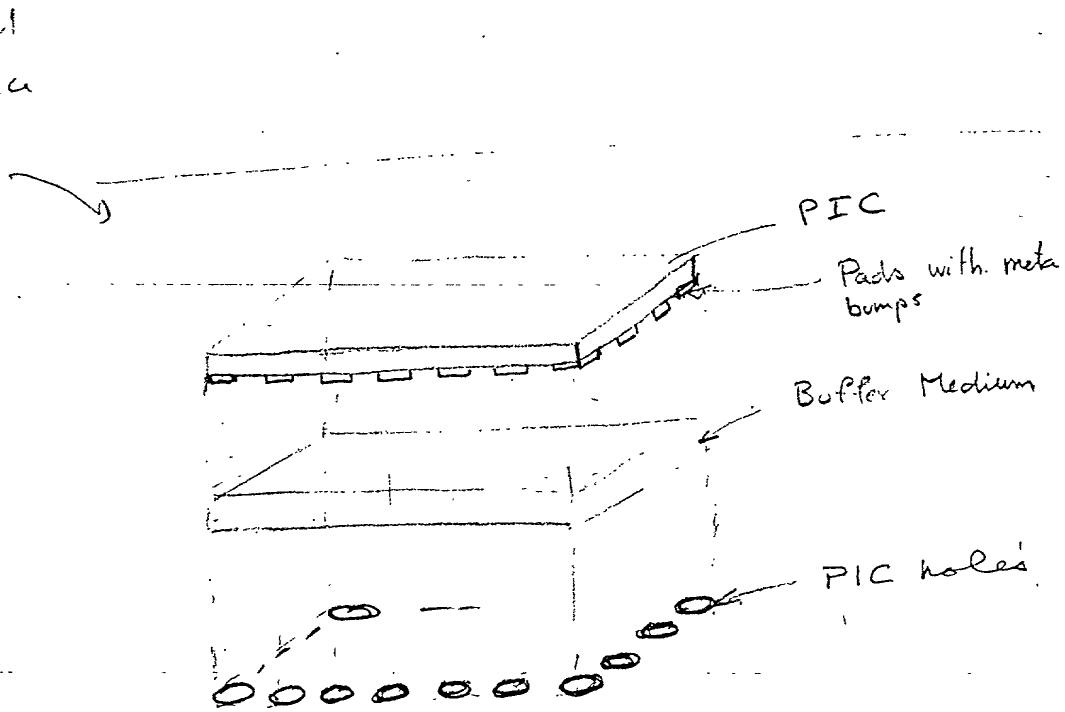
FIGURE 17



S Selects output or input buffer.

E Selects the pad to connect to test port

FIGURE 7c



Buffer Medium (1) Elastomeric material made of polymer with z-axis conductors 5-100 mils thickness

(2) Carrier of Button springs

FIGURE 8A

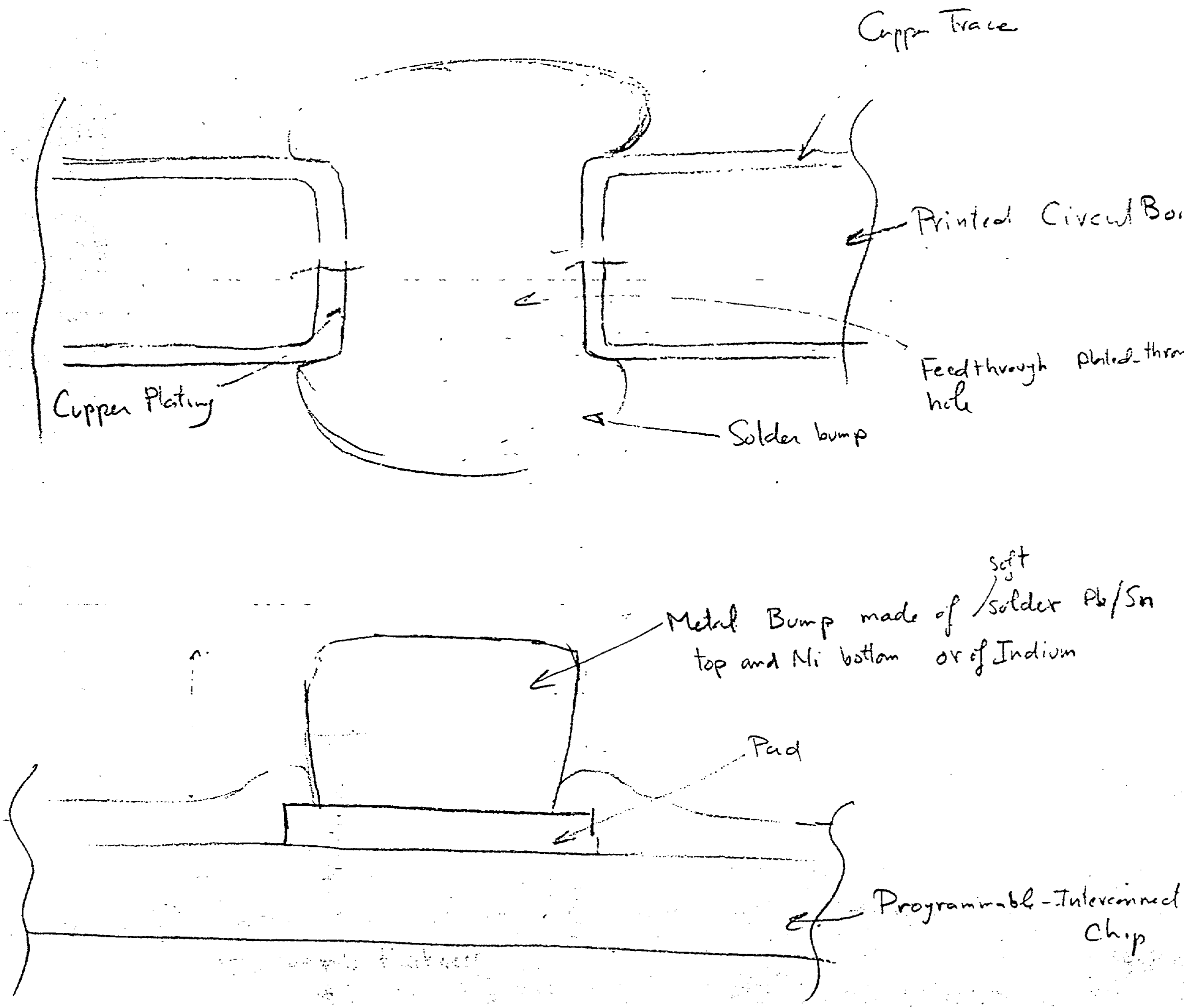


FIGURE 86